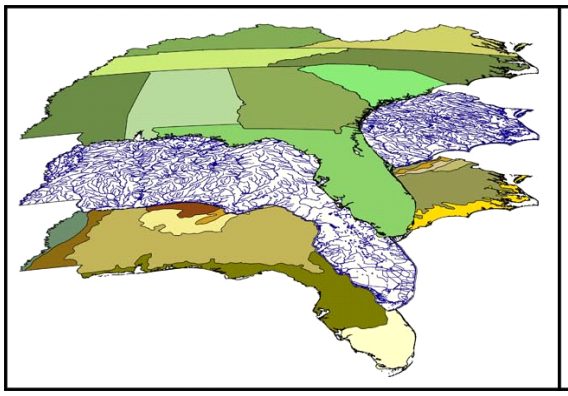


SOUTHEAST GAP ANALYSIS PROJECT

Species Modeling Report

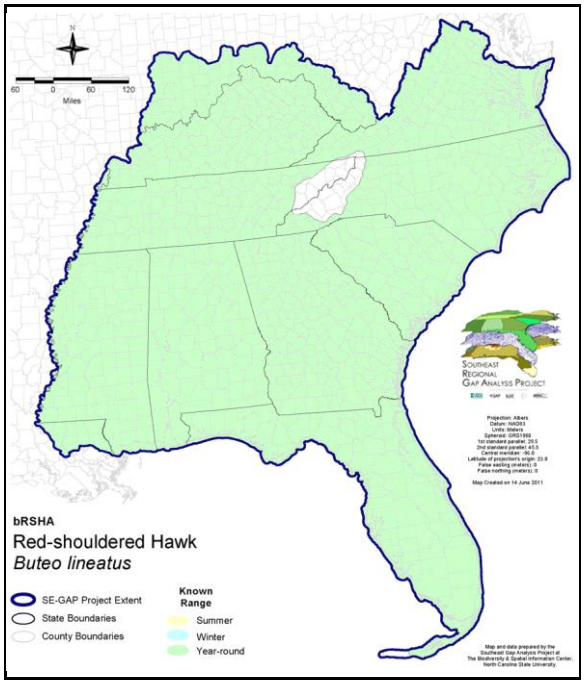
Red-shouldered Hawk

Buteo lineatus

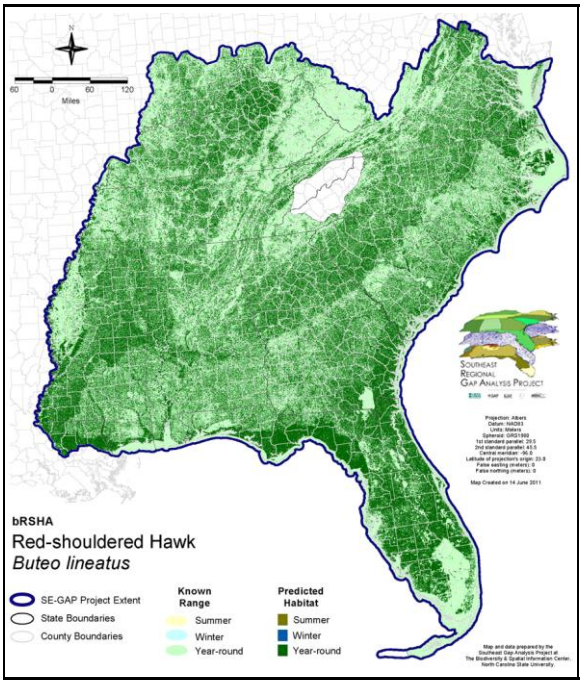
Taxa: Avian
Order: Falconiformes
Family: Accipitridae

SE-GAP Spp Code: **bRSHA**
ITIS Species Code: 175359
NatureServe Element Code: ABNKC19030

KNOWN RANGE:



PREDICTED HABITAT:



Range Map Link: http://www.basic.ncsu.edu/segap/datazip/maps/SE_Range_bRSHA.pdf
Predicted Habitat Map Link: http://www.basic.ncsu.edu/segap/datazip/maps/SE_Dist_bRSHA.pdf
GAP Online Tool Link: http://www.gapserve.ncsu.edu/segap/segap/index2.php?species=bRSHA
Data Download: http://www.basic.ncsu.edu/segap/datazip/region/vert/bRSHA_se00.zip

PROTECTION STATUS:

Reported on March 14, 2011

Federal Status: ---

State Status: IA (E), IA (E), IL (RT), IN (SSC), KY (N), MI (T), MN (SPC), NJ (E/T), NV (YES), NY (SC), NY (SC), RI (Not Listed), UT (None), WI (THR), ON (NAR), QC (RetirΘe)

NS Global Rank: G5

NS State Rank: AL (S5), AR (S3), AZ (SNA), CA (SNRB), CO (SNA), CT (S3B), CT (S3B), DC (S2B,S3N), DE (S2B,S3N), FL (SNR), GA (S4), IA (S2B), IA (S2B), IL (S2S3), IN (S3), KS (S3), KY (S4B,S4N), LA (S5), MA (S4B,S4N), MD (S4S5B,S4N), ME (S3N,S4B), MI (S3S4), MN (S3B,SNRN), MO (S4), MS (S4B), MT (SNA), NC (S4B,S4N), ND (SNA), NE (S1), NH (S3), NJ (S1B,S2N), NM (SNA), NV (S1), NY (S4B), NY (S4B), OH (S3), OK (S5), OR (S3N), PA (S4B,S3S4N), RI (S3B,S3N), SC (SNR), SD (SUB), SD (SUB), TN (S4B), TX (S4B), UT (SNA), VA (S4), VT (S3S4B), VT (S3S4B), WA (SNA), WI (S3S4B,S1N), WV (S4B,S4N), MB (SNA), NB (S2B), NS (SNA), ON (S4B), PE (SNA), QC (S4B), SK (SNA)

SUMMARY OF PREDICTED HABITAT BY MANAGMENT AND GAP PROTECTION STATUS:

	US FWS		US Forest Service		Tenn. Valley Author.		US DOD/ACOE	
	ha	%	ha	%	ha	%	ha	%
Status 1	109,293.8	< 1	6,635.7	< 1	0.0	0	0.0	0
Status 2	218,407.0	< 1	68,884.7	< 1	0.0	0	2,887.8	< 1
Status 3	2,262.2	< 1	817,253.7	2	27,564.9	< 1	440,516.9	< 1
Status 4	72.7	< 1	0.0	0	0.0	0	122.7	< 1
Total	330,035.8	< 1	892,774.2	2	27,564.9	< 1	443,527.4	< 1

	US Dept. of Energy		US Nat. Park Service			NOAA	Other Federal Lands	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	47,001.6	< 1	73.0	< 1	13,735.6	< 1
Status 2	0.0	0	16,239.9	< 1	10,756.4	< 1	47.6	< 1
Status 3	34,018.7	< 1	203,543.4	< 1	0.0	0	6,902.5	< 1
Status 4	0.0	0	0.0	0	0.0	0	0.0	0
Total	34,018.7	< 1	266,784.8	< 1	10,829.4	< 1	20,685.7	< 1

	Native Am. Reserv.		State Park/Hist. Park		State WMA/Gameland		State Forest	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	366.9	< 1	52.2	< 1	0.0	0
Status 2	0.0	0	2,653.0	< 1	577,413.6	1	50.8	< 1
Status 3	7,631.9	< 1	638,766.7	1	142,631.4	< 1	304,965.6	< 1
Status 4	0.0	0	< 0.1	< 1	56,932.5	< 1	10.1	< 1
Total	7,631.9	< 1	641,786.8	1	777,029.7	1	305,026.5	< 1

	State Coastal Reserve		ST Nat.Area/Preserve		Other State Lands		Private Cons. Easemt.	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	3,726.7	< 1	0.0	0	0.0	0
Status 2	14,376.2	< 1	59,996.7	< 1	3.6	< 1	2,815.8	< 1
Status 3	0.0	0	24,823.4	< 1	30,186.0	< 1	164,002.8	< 1
Status 4	0.0	0	0.0	0	3,009.3	< 1	< 0.1	< 1
Total	14,376.2	< 1	88,546.9	< 1	33,198.9	< 1	166,818.7	< 1

	Private Land - No Res.		Water			Overall Total	
	ha	%	ha	%		ha	%
Status 1	0.0	0	0.0	0		180,885.6	< 1
Status 2	0.0	0	0.0	3		974,533.3	2
Status 3	1,159.1	< 1	< 0.1	< 1		2,846,229.4	7
Status 4	47,859,730.8	91	28,501.8	< 1		48,005,239.9	91
Total	47,860,889.9	91	28,502.1	< 1		52,006,888.2	100

GAP Status 1: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, and intensity) are allowed to proceed without interference or are mimicked through management.

GAP Status 2: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive use or management practices that degrade the quality of existing natural communities.

GAP Status 3: An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type or localized intense type. It also confers protection to federally listed endangered and threatened species throughout the area.

GAP Status 4: Lack of irrevocable easement or mandate to prevent conversion of natural habitat types to anthropogenic habitat types. Allows for intensive use throughout the tract. Also includes those tracts for which the existence of such restrictions or sufficient information to establish a higher status is unknown.

PREDICTED HABITAT MODEL(S):

Year-round Model:

Habitat Description: Red-shouldered hawks are associated with mature bottomland forests or riparian habitat (Lee 2000), with flooded swamps or some form of open water nearby (Hamel 1992 Palmer 1988). Johnsgards (1990) in fact lists the Red-shouldered hawks favored habitat as 'the borders of lakes and streams or other wetlands.' Breeding territories have also been recorded in suburban wooded areas (Boynton 1993). Seldom far from wetlands, red-shouldered hawks feed in marshes, wooded lakes or ponds, or in swamps (Hamel 1992). Breeding habitat varies from bottomland hardwoods and riparian areas (Stewart 1949, Henny et al. 1973, Bednarz and Dinsmore 1981, Kimmel and Fredrickson 1981, Woodrey 1986, Preston et al. 1989) to upland deciduous or mixed deciduous-conifer forest (Titus and Mosher 1981, Armstrong and Euler 1983, Morris and Lemon 1983, Crocoll and Parker 1989). Nesting areas are almost always found near some form of water, such as a swamp, marsh, river, or pond (Preston et al. 1989, Bosakowski et al. 1992), and the habitat is usually well forested (Portnoy and Dodge 1979, Kimmel and Fredrickson 1981, Titus and Mosher 1981, Morris and Lemon 1983, Ebbers 1989). Further, nesting habitat typically is mature forest with a well-developed high canopy and variable amounts of understory vegetation (Postupalsky 1980, Titus and Mosher 1981, Armstrong and Euler 1983, Morris and Lemon 1983, Titus 1984, Preston et al. 1989). According to Hamel (1992), nests in swamps, bottomlands, and moist forests, never in upland forests in the southeast. Prefers swamps, but also uses marshes, wet prairies, pine flatwoods, and mesic hammocks (Layne et al. 1977). Mangrove, cypress forest, pine forest, and brush are also reported as breeding habitat (Robertson and Kushlan 1984). Swamps, river floodplains, moist woodlands, and hammocks, hunts in woods or at forest edge, drainage canals, and marshes (Stevenson and Anderson 1994).

Red-shouldered hawks are rarely found in the mountains (Potter et al 1980).

The nest is typically located in the crotch of a large tree (Lee 2000) of a mature forest with a well-defined understory (Palmer 1988) Normally the nest tree is among the forest interior (Lee 2000). No particular tree species is preferred, however in NC both oaks and white pines are often used (Boynton 1993). Red-shouldered hawks forage under the canopy in the forest interior, and also near water in more open areas proximal to the breeding territory (Palmer 1988). The nest is usually built in the main crotch of a large, living tree in mature forest, although in Florida, palmettos may be used. In eastern North America, nests generally are far from forest edges (Bednarz 1979, Apfelbaum and Seelbach 1983, Titus and Mosher 1987, Palmer 1988, Ebbers 1989). Bent (1937) reported an unbroken record of 26 years for a territory that was occupied for at least 42 years, until the woods were nearly ruined by cutting.

Regarding spatial habitat characteristics, they generally are found in large forested areas; in most areas red-shouldered hawks seem to need tracts of at least 100-250 ha (but may use smaller forest patch if it is part of a larger forested ecosystem) (Bushman and Therres 1988). Generally replaced by the red-tailed hawk in fragmented open forests.

Regarding spatial habitat characteristics, in southern California, the average home range size was 1.21 +/- 0.35 square km for males and 1.01 +/- 0.19 square km for females (using the harmonic mean method). Woodland was 39% of the habitat within the home ranges with such species as oak and willow being the most common (Bloom et. Al. 1993). Average home range size in one study was reported at 158 arcres (Schoener 1968).

Quoted directly from existing state habitat notes - K. Cook, 13Feb05

Additional information:
Bowsakowski et al. (1992) state "Red-shouldered Hawks nested in areas near larger wetlands, closer to streams, and had lower slope locations than unused sites. These preferences confirm wetlands as an important habitat in this region and elsewhere….Red-shouldered Hawks in this study also nested in areas having greater proportions of coniferous and mixed forest than expected. A correlation with coniferous growth has been noted previously only by Sharp and Campbell (1982), albeit most studies have been conducted in deciduous forests. "We hypothesize that the apparent preference for coniferous forest could be somewhat correlated with the mesic and/or acidic soils of wet- lands that are often dominated by eastern hemlock and white pine. Other possible reasons could be that these dense canopied stands may be too thick for nesting by Red-tailed Hawks or may provide concealment from Great Horned Owl (Bubo virginianus) predation (Bosakowski et al. 1989)." This study also states that Red-shouldered hawk calling

frequency was significantly grester in forested patches of more than 10ha. Most publishged research on red-tailed hawks found that they nest within 100m of water (Jacobs and Jacobs 2002). Spatial habitat characteristics: 40 ha patches were the minimum used (Robbins et al. 1989). K. Cook 13Feb05

Hydrography Mask:

Utilizes open water features with buffer of 1000m from selected water features.

Contiguous Patch Vegetation Size (Hectares): 40

Utilizes wet vegetation features with buffers of 1000m from and unlimited into selected vegetation features.

Selected Map Units:

Functional Group	Map Unit Name
Anthropogenic	Deciduous Plantations
Anthropogenic	Developed Open Space
Anthropogenic	Evergreen Plantations
Anthropogenic	Low Intensity Developed
Anthropogenic	Pasture/Hay
Anthropogenic	Successional Grassland/Herbaceous
Anthropogenic	Successional Grassland/Herbaceous (Other)
Anthropogenic	Successional Grassland/Herbaceous (Utility Swath)
Anthropogenic	Successional Shrub/Scrub (Clear Cut)
Anthropogenic	Successional Shrub/Scrub (Other)
Anthropogenic	Successional Shrub/Scrub (Utility Swath)
Coastal Dune & Freshwater Wetland	Atlantic and Gulf Coastal Plain Interdunal Wetland
Coastal Dune & Freshwater Wetland	Atlantic Coastal Plain Northern Dune and Maritime Grassland
Coastal Dune & Freshwater Wetland	Atlantic Coastal Plain Southern Dune and Maritime Grassland
Coastal Dune & Freshwater Wetland	East Gulf Coastal Plain Dune and Coastal Grassland
Coastal Dune & Freshwater Wetland	Southwest Florida Dune and Coastal Grassland
Forest/Woodland	Alabama Ketona Glade and Woodland
Forest/Woodland	Appalachian Hemlock-Hardwood Forest
Forest/Woodland	Appalachian Shale Barrens
Forest/Woodland	Atlantic Coastal Plain Central Maritime Forest
Forest/Woodland	Atlantic Coastal Plain Mesic Hardwood and Mixed Forest
Forest/Woodland	Atlantic Coastal Plain Northern Maritime Forest
Forest/Woodland	Atlantic Coastal Plain Northern Mixed Oak-Heath Forest
Forest/Woodland	Atlantic Coastal Plain Southern Maritime Forest
Forest/Woodland	Central Appalachian Alkaline Glade and Woodland
Forest/Woodland	Central Appalachian Oak and Pine Forest
Forest/Woodland	Central Interior Highlands Calcareous Glade and Barrens
Forest/Woodland	Central Interior Highlands Dry Acidic Glade and Barrens
Forest/Woodland	Cumberland Sandstone Glade and Barrens
Forest/Woodland	East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland - Woodland Modifier
Forest/Woodland	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest - Mixed Modifier
Forest/Woodland	East Gulf Coastal Plain Maritime Forest
Forest/Woodland	East Gulf Coastal Plain Northern Loess Bluff Forest
Forest/Woodland	East Gulf Coastal Plain Northern Mesic Hardwood Forest
Forest/Woodland	East Gulf Coastal Plain Southern Loess Bluff Forest
Forest/Woodland	East Gulf Coastal Plain Southern Mesic Slope Forest
Forest/Woodland	Mississippi Delta Maritime Forest
Forest/Woodland	Nashville Basin Limestone Glade
Forest/Woodland	Northeastern Interior Dry Oak Forest - Mixed Modifier
Forest/Woodland	South Florida Pine Rockland
Forest/Woodland	South-Central Interior Mesophytic Forest
Forest/Woodland	Southeast Florida Coastal Strand and Maritime Hammock
Forest/Woodland	Southern and Central Appalachian Cove Forest
Forest/Woodland	Southern and Central Appalachian Mafic Glade and Barrens
Forest/Woodland	Southern Piedmont Dry Oak-(Pine) Forest - Mixed Modifier
Forest/Woodland	Southern Piedmont Dry Oak-Heath Forest - Mixed Modifier
Forest/Woodland	Southern Piedmont Dry Oak-Heath Forest - Virginia/Pitch Pine Modifier

Forest/Woodland	Southern Piedmont Glade and Barrens
Forest/Woodland	Southern Piedmont Mesic Forest
Forest/Woodland	Southwest Florida Coastal Strand and Maritime Hammock
Freshwater Tidal Marsh & Wetland	Atlantic Coastal Plain Central Fresh-Oligohaline Tidal Marsh
Freshwater Tidal Marsh & Wetland	Atlantic Coastal Plain Embayed Region Tidal Freshwater Marsh
Freshwater Tidal Marsh & Wetland	Atlantic Coastal Plain Northern Fresh and Oligohaline Tidal Marsh
Freshwater Tidal Marsh & Wetland	Florida Big Bend Fresh-Oligohaline Tidal Marsh
Prairie	Bluegrass Basin Savanna and Woodland
Prairie	East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland
Prairie	East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland - Herbaceous Modifier
Prairie	East Gulf Coastal Plain Jackson Plain Prairie and Barrens
Prairie	East Gulf Coastal Plain Jackson Prairie and Woodland
Prairie	Eastern Highland Rim Prairie and Barrens
Prairie	Eastern Highland Rim Prairie and Barrens - Dry Modifier
Prairie	Florida Dry Prairie
Prairie	Panhandle Florida Limestone Glade
Prairie	Pennyroyal Karst Plain Prairie and Barrens
Prairie	Southern Ridge and Valley Patch Prairie
Prairie	Western Highland Rim Prairie and Barrens
Wetlands	Atlantic Coastal Plain Blackwater Stream Floodplain Forest - Forest Modifier
Wetlands	Atlantic Coastal Plain Blackwater Stream Floodplain Forest - Herbaceous Modifier
Wetlands	Atlantic Coastal Plain Brownwater Stream Floodplain Forest
Wetlands	Atlantic Coastal Plain Clay-Based Carolina Bay Forested Wetland
Wetlands	Atlantic Coastal Plain Clay-Based Carolina Bay Herbaceous Wetland
Wetlands	Atlantic Coastal Plain Depression Pondshore
Wetlands	Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest - Taxodium/Nyssa Modifier
Wetlands	Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest - Oak Dominated Modifier
Wetlands	Atlantic Coastal Plain Northern Basin Peat Swamp
Wetlands	Atlantic Coastal Plain Northern Basin Swamp and Wet Hardwood Forest
Wetlands	Atlantic Coastal Plain Northern Pondshore
Wetlands	Atlantic Coastal Plain Northern Wet Longleaf Pine Savanna and Flatwoods
Wetlands	Atlantic Coastal Plain Peatland Pocosin
Wetlands	Atlantic Coastal Plain Sandhill Seep
Wetlands	Atlantic Coastal Plain Small Blackwater River Floodplain Forest
Wetlands	Atlantic Coastal Plain Small Brownwater River Floodplain Forest
Wetlands	Atlantic Coastal Plain Southern Wet Pine Savanna and Flatwoods
Wetlands	Atlantic Coastal Plain Streamhead Seepage Swamp, Pocosin, and Baygall
Wetlands	Central Appalachian Floodplain - Forest Modifier
Wetlands	Central Appalachian Floodplain - Herbaceous Modifier
Wetlands	Central Appalachian Riparian - Forest Modifier
Wetlands	Central Appalachian Riparian - Herbaceous Modifier
Wetlands	Central Florida Herbaceous Seep
Wetlands	Central Florida Pine Flatwoods
Wetlands	Central Interior Highlands and Appalachian Sinkhole and Depression Pond
Wetlands	East Gulf Coastal Plain Interior Shrub Bog
Wetlands	East Gulf Coastal Plain Jackson Plain Dry Flatwoods - Open Understory Modifier
Wetlands	East Gulf Coastal Plain Jackson Plain Dry Flatwoods - Scrub/Shrub Understory Modifier
Wetlands	East Gulf Coastal Plain Large River Floodplain Forest - Forest Modifier
Wetlands	East Gulf Coastal Plain Large River Floodplain Forest - Herbaceous Modifier
Wetlands	East Gulf Coastal Plain Near-Coast Pine Flatwoods - Offsite Hardwood Modifier
Wetlands	East Gulf Coastal Plain Near-Coast Pine Flatwoods - Open Understory Modifier
Wetlands	East Gulf Coastal Plain Near-Coast Pine Flatwoods - Scrub/Shrub Understory Modifier
Wetlands	East Gulf Coastal Plain Northern Depression Pondshore
Wetlands	East Gulf Coastal Plain Northern Seepage Swamp
Wetlands	East Gulf Coastal Plain Small Stream and River Floodplain Forest
Wetlands	East Gulf Coastal Plain Southern Depression Pondshore

Wetlands	East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods
Wetlands	East Gulf Coastal Plain Treeless Savanna and Wet Prairie
Wetlands	Floridian Highlands Freshwater Marsh
Wetlands	Lower Mississippi River Bottomland and Floodplain Forest
Wetlands	Lower Mississippi River Bottomland Depressions - Forest Modifier
Wetlands	Lower Mississippi River Bottomland Depressions - Herbaceous Modifier
Wetlands	Mississippi River Low Floodplain (Bottomland) Forest
Wetlands	Mississippi River Riparian Forest
Wetlands	North-Central Appalachian Acidic Swamp
Wetlands	North-Central Appalachian Seepage Fen
Wetlands	North-Central Interior and Appalachian Rich Swamp
Wetlands	South Florida Bayhead Swamp
Wetlands	South Florida Cypress Dome
Wetlands	South Florida Dwarf Cypress Savanna
Wetlands	South Florida Freshwater Slough and Gator Hole
Wetlands	South Florida Hardwood Hammock
Wetlands	South Florida Pine Flatwoods
Wetlands	South Florida Pond-Apple/Popash Slough
Wetlands	South Florida Wet Marl Prairie
Wetlands	South Florida Willow Head
Wetlands	South-Central Interior Large Floodplain - Forest Modifier
Wetlands	South-Central Interior Large Floodplain - Herbaceous Modifier
Wetlands	South-Central Interior Small Stream and Riparian
Wetlands	South-Central Interior/Upper Coastal Plain Wet Flatwoods
Wetlands	Southern and Central Appalachian Bog and Fen
Wetlands	Southern Appalachian Seepage Wetland
Wetlands	Southern Coastal Plain Blackwater River Floodplain Forest
Wetlands	Southern Coastal Plain Herbaceous Seepage Bog
Wetlands	Southern Coastal Plain Hydric Hammock
Wetlands	Southern Coastal Plain Nonriverine Basin Swamp
Wetlands	Southern Coastal Plain Nonriverine Cypress Dome
Wetlands	Southern Coastal Plain Seepage Swamp and Baygall
Wetlands	Southern Piedmont Large Floodplain Forest - Forest Modifier
Wetlands	Southern Piedmont Large Floodplain Forest - Herbaceous Modifier
Wetlands	Southern Piedmont Seepage Wetland
Wetlands	Southern Piedmont Small Floodplain and Riparian Forest
Wetlands	Southern Piedmont/Ridge and Valley Upland Depression Swamp
Wetlands	Unconsolidated Shore (Lake/River/Pond)
Wetlands	Western Highland Rim Seepage Fen

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